

Title: SMALL GRAIN SIZE, CONFORMAL ALUMINUM INTERCONNECTS AND METHOD FOR THEIR FORMATION

an aluminum film of small grain size supported by the second layer of titanium nitride and extending throughout the interconnect via such that it is coplanar with the top surface defining the interconnect via wherein the second layer of titanium nitride comprises a mixture of 1:1 of <111> and <200> oriented grains that are effective for forming the aluminum film of small grain size.

37. (Amended) An interconnect structure in an integrated circuit, comprising:
- a first layer of titanium nitride;
  - an aluminum film;
  - a second layer of titanium nitride between the first layer of titanium nitride and the aluminum film wherein the aluminum film has a small grain size wherein the second layer of titanium nitride comprises a polycrystalline orientation that comprises a mixture of 1:1 of <111> and <200> oriented grains that are effective for forming an aluminum film of small grain size.
38. (Amended) An interconnect structure in an interconnect via defined by a bottom surface, a top surface, and sidewalls, comprising:
- a first layer of titanium nitride formed on the sidewalls and the bottom surface defining the interconnect via;
  - a second layer of titanium nitride supported by the first layer of titanium nitride; and
  - an aluminum film having a small grain size, supported by the second layer of titanium nitride and extending throughout the interconnect via such that it is coplanar with the top surface defining the interconnect via wherein the second layer of titanium nitride comprises a polycrystalline orientation that comprises a mixture of 1:1 of <111> and <200> oriented grains that are effective for forming the aluminum film of small grain size.
39. (Amended) A transistor with an interconnect via, defined by a surface substantially free of voids, comprising:
- an interconnect of silicon oxide or borophosphosilicate glass that defines a semiconductor structure that defines an interconnect via comprising an active region of a transistor;
  - a titanium nitride film on the semiconductor structure;
  - a second titanium nitride film having a polycrystalline orientation that overlays the